

**ABSTRACT**

A new partial product bit generator is used to generate a partial product bit  $PP_{ji}$ . In some embodiments, the partial product bit generator generates the partial product bit  $PP_{ji}$  from intermediate signals that are able to be generated concurrently, for example in two levels of combinatorial logic. The partial product bit  $PP_{ji}$  is then able to be generated from the intermediate signal, for example in only one level of combinatorial logic. In such embodiments, a long series of combinatorial logic operations is not required.

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